C0150025, Incoming
#4462

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CASTLE VALLEY MINING LLC

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March 16, 2014

Utah Division of Oil, Gas, and Mining Coal Program
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Subject: Conditional Approval of Midterm Completion Response, Task ID #4462, Bear Canyon Mine, Castle Valley Mining LLC, C/015/0025

To whom it may concern,

Castle Valley Mining LLC located in Huntington, Utah would like to submit final copies for incorporation into the MRP. The following documents are included with 2 clean copies: A C2 form, Chapter 5, Chapter 7 Pages 7-53, 7-56, 7-60, 7-60A, 7-90, and Plate 7-11. As well as Appendix 1H3 & 1H4.

Any questions please call me at (435) 687-2178

Sincerely,

JAREN JORGENSEN

Jaren Jorgensen
Engineer Tech

P.O. Box 475 • Huntington, UT 84528
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APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Castle Valley Mining LLC
Mine: Bear Canyon Mine
Permit Number: C/015/0025
Title: Mid-Term Review Amendment

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Chapter 5
☐ Add	☒ Replace	☐ Remove	Chapter 7 Page 7-53
☐ Add	☒ Replace	☐ Remove	Chapter 7 Page 7-56
☐ Add	☒ Replace	☐ Remove	Chapter 7 Page 7-60
☐ Add	☒ Replace	☐ Remove	Chapter 7 Page 7-60A
☐ Add	☒ Replace	☐ Remove	Chapter 7 Page 7-90
☐ Add	☒ Replace	☐ Remove	Plate 7-11
☐ Add	☒ Replace	☐ Remove	Appendix 1H3 & 1H4
☐ Add	☒ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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Chapter 5

1R645-301-500 Engineering

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R645-301-511 General Requirements

This chapter includes descriptions of existing and proposed coal mining and reclamation operations and their potential impacts to the environment.

R645-301-512 Certification

1. Maps, cross-sections and designs required by R645-301 to be certified have been prepared by or under the direction of a qualified, registered, professional engineer whose stamp and signature can be found on the individual maps or design. All maps, cross-sections, and designs will meet all requirements of R645-301.

R645-301-513 Compliance with MSHA Regulation and Approvals

1. Castle Valley Mining LLC, agrees to comply with all MSHA regulations pertaining to dams, embankments, impoundments, sediment ponds, excess spoil, coal waste, portals, and mining operation, timing, and sequence.

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R645-301-514 Inspections

All engineering inspections will be conducted in accordance with both Utah State Law and the Federal Code of Regulations. The inspections will be done by either a qualified registered engineer or a qualified person under the direction of a qualified registered engineer as required by law.

R645-301-515 Reporting and Emergency Procedures

515.100 Slides

At any time a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment, the Division will be notified by the fastest available means and Castle Valley Mining LLC, will comply with any reasonable remedial measures required by the Division.

515.200 Impoundment Hazards

If any examination or inspection discloses that a potential impoundment hazard exists, Castle Valley Mining LLC, will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately.

515.310 Temporary Abandonment

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In the event of a temporary abandonment of operations Castle Valley Mining LLC, will still comply with all provisions of the approved permit.

515.311 Inactive Areas

Castle Valley Mining LLC will support and maintain all access openings and surface facilities in all areas where there are no current operations, but operations are to be resumed.

515.320 Temporary Cessation of Operations

In the event of a temporary cessation of operation for a period of 30 days or more, Castle Valley Mining LLC, will submit a notice to the Division as soon as it is known that the temporary cessation will extend beyond 30 days or more. This notice will include: a statement of the exact number of surface acres and the horizontal and vertical extent of sub-surface strata which have been in the permit area prior to cessation or abandonment, the extent and kind of surface reclamation of surface area which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation.

Castle Valley Mining LLC will seal portals which are not to be utilized for mine inspection or access during temporary cessation of operation. These seals will be constructed of woven wire or cement block and securely attached to the portal entry so as to make trespass by men or animals prohibitive. All portals which are to be utilized will be posted with "No Trespassing" and "Keep Out" notices. Where doors exist such as fan entries, this will also be locked and signed accordingly.

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R645-301-520 Operation Plan

Castle Valley Mining LLC, has operations at several different sites. Because of the complexity of the entire unit, 5 different areas of operation and reclamation will be discussed. The five areas are listed below.

Castle Valley Mining LLC Permit Area Components

1. Bear Canyon Mine Area
2. Tank Seam Area
3. WHR Blind Canyon Seam Area
4. WHR Tank Seam Area
5. Morhland Area

521.100 Cross Section and Maps

Maps showing all relevant information have been prepared by or under the direction of, and are certified by a registered certified professional engineer.

521.110 Previously Mine Area

The location and extent of know workings of active, inactive, and abandoned underground mines, are shown on Plates 5-1.

521.120 Surface and Subsurface Facilities and Features

The location of all buildings, surface and sub-surface man made features, public roads, waste piles, sediment ponds, and water impoundments are shown on Plates 5-2.

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521.130 Landownership and Right of Entry and Public Interest Maps

521.131 Land Ownership Maps

All boundaries of lands and names of present owners of record of those land, both surface and subsurface are shown on Plate1-2 and Plate 1-3.

521.132 Boundaries of Land C.W. Mining Comapny, Has Right of Entry To.

These boundaries are shown on Plate 1-2 and Plate 1-3.

521.133 Protection of Public Interest

Castle Valley Mining LLC, currently has no operations within 100 feet of public land or a public road.

521.140 Mine Maps and Permit Area Maps

521.141 Disturbed Boundary and Timing Of Mining

The boundary of all disturbed and proposed disturbed areas are shown on Plates 5-2. The areas to be mined and the sequence and timing of the mining are shown on Plate 5-1A (Blind Canyon Seam), Plate 5-1B (Hiawatha Seam), and Plate 5-1C (Tank Seam). Plates 5-2 also shown the changes to all facilities and features that have been or will be made. The boundary showing all areas that may be affected by mining is shown on Plate 1-1 (Permit Boundary).

521.142 Underground Workings and Subsidence Areas

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Underground workings and areas where planned subsidence mining methods will be used are shown on Plates 5-1. R645-301-525 discusses subsidence in greater detail.

521.143 Mine Waste Disposal Sites

Temporary and permanent waste disposal sites will be shown on Plates 5-2. C. W. Mining Company is currently permitted to haul all mine waste to Hiawatha for permanent disposal. The location of these sites can be found in the Hiawatha Coal Company MRP.

521.150 Land Configuration Maps

All land surface configuration maps give surface contours which adequately represent the existing land surface configuration of the permit area.

521.151 Cross Sections and Slope Measurements

All areas have representative cross sections that extend 100 feet beyond the disturbed boundary and show the slope measurements for pre-mining, operational, and post-mining land configurations. The cross-sections are discussed in greater detail in R645-301-521.160 and R645-301-540.

521.152 Previously Mined Areas

See R645-301-521.151

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521.160 Maps and Cross Sections of the Features of the Permit Area

Plates 5-2 show the location of all buildings, utility corridors, facilities, affected areas, coal storage areas, cleaning and loading areas, topsoil stockpile areas, coal preparation and storage areas, underground development waste areas, non coal waste areas, waste disposal facilities, refuse piles, slurry impoundments, sediment ponds, and explosive storage magazines. Cross section details are shown on Plate 5-8 and in Appendices 5-H, 5-I, 5-J, 5-K, and 5-L The location of the cross sections are shown on Plates 2-3, 5-6, and 5-7.

521.170 Transportation Facilities Maps

Transportation facilities are shown on Plates 5-2. Road details are shown on Plates 5-4 and on the cross-sections in Appendices 5-H, 5-I, 5-J, 5-K, and 5-L. Road construction details can be found in Appendices 5-F and 5-G.

521.180 Support Facilities

Support Facilities are discussed under R645-301-526.

521.200 Signs and Marker Specifications

Signs and markers will be posted, maintained and removed by Castle Valley Mining LLC, and will be of a durable material and be a uniform design that can be easily seen and read. The will be maintained during all activities to which they pertain and will conform with all local laws and regulations.

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521.240 Mine and Permit Identification Signs

Identification signs are displayed at each point of access from public roads to areas of surface operations and facilities on the permit area. These signs show the name, business address and telephone number of Castle Valley Mining LLC, and the identification number of the permanent program permit authorizing coal mining and reclamation activities.

521.250 Perimeter Markers

The perimeter of all areas affected by surface operations or facilities are clearly marked by perimeter markers.

521.260 Buffer Zone Markers

Stream buffer zone signs are installed at locations where mining and reclamation operations are conducted in the vicinity or perennial and intermittent streams.

521.270 Topsoil Markers

Topsoil markers have been installed where topsoil or other vegetation-supporting material is physically segregated and stockpiled under R645-301-234.

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R645-301-522 Coal Recovery

It is in the interest of Castle Valley Mining LLC, to maximize the recovery of coal resources. A large portion of Castle Valley Mining LLC, coal resources are contained in Federal leases. A major condition of each lease agreement is maximum recovery of resources. When accessible, mine workings in each lease are inspected on a regular basis by the Bureau of Land Management personnel experienced in underground coal mining methods. Justification for not recovering coal deposits that may be detrimentally affected in terms of future recovery by the proposed operations include the following.

A. Seams that are too thin to be economically minable given existing or reasonably foreseeable technology.

B. Coal seems separated by insufficient rock intervals to allow safe mining above or below worked out areas.

C. Seems that are relatively thick but not extensive, and isolated by thin coal which would make development cost prohibitive.

There are four main seams in the Bear Canyon Property, the Tank Seam, the Bear Canyon Seam, Blind Canyon Seam, and Hiawatha Seam. There are no plans to mine both seams due to the close proximity of the Bear Canyon seam to the Blind Canyon Seam (<30 feet interburden). There are no plans to mine the Hiawatha Seam in Wild Horse Ridge due to the thinning of the seam. Mining plan, sequence and projected development for the Bear Canyon, Hiawatha, and Tank seams are shown on Plates 5-1A, 5-1B and 5-1C respectively. Geology information is discussed in Chapter 6.

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R645-301-523 Mining Method

Mining at the Bear Canyon complex is done by a longwall and continuous miners. The main entries consist of a five-entry system on 80 ft -200 ft centers to be driven to the property limits. For longwall recovery 2-5 gate entries are driven off the mains on either side of the panel to the head of the panel where they are connected by bleeders. The longwall then mines out the panel. For continuous miner recover sub-mains consisting of five entries on 80 ft - 200 ft centers are then driven off the mains and room-and-pillar panels are developed off the sub-mains. Rooms are developed within the panels on 70 ft - 150 ft centers. This is referred to as "Development". The pillars are then recovered according to the approved plan. This is referred to as "retreat". Timber or mobile roof supports are installed to support the roof and provide for breaker control of the caving roof. Retreat mining of this type will provide a recovery of 70pct - 80 pct within the panels. See Figures 5-1 and 5-2. Sub-mains under the escarpment area in Bear Canyon will be developed and left.

Anticipated average annual production is 2,100,000 Tons from the longwall face and 400,000 Tons from development mining. Before the longwall face comes on line and after it is finished some room and pillar retreat mining will be done. The average annual production from room and pillar retreat mining is 600,000 Tons.

As can be seen on Plates 5-1A and 5-1B, the lower seam workings are planned to be columnized with the upper seams as closely as practicable. Where this is not practiced due to geologic conditions, pillars will be adequately sized to afford stability for the rooms. Geologic conditions and the limited lateral extent of reserves in the Tank Seam precludes columnizing of pillars with the other seams in some areas. However, experience has shown that the overburden (250') between these seams will provide adequate roof stability even if the pillars are not all columnized. The mining plan sequence allows for recovery of the upper seam areas (Tank Seam first, then Blind Canyon Seam) prior to final recovery of the lower seam. This procedure is consistent with accepted engineering practice in multiple seam mining.

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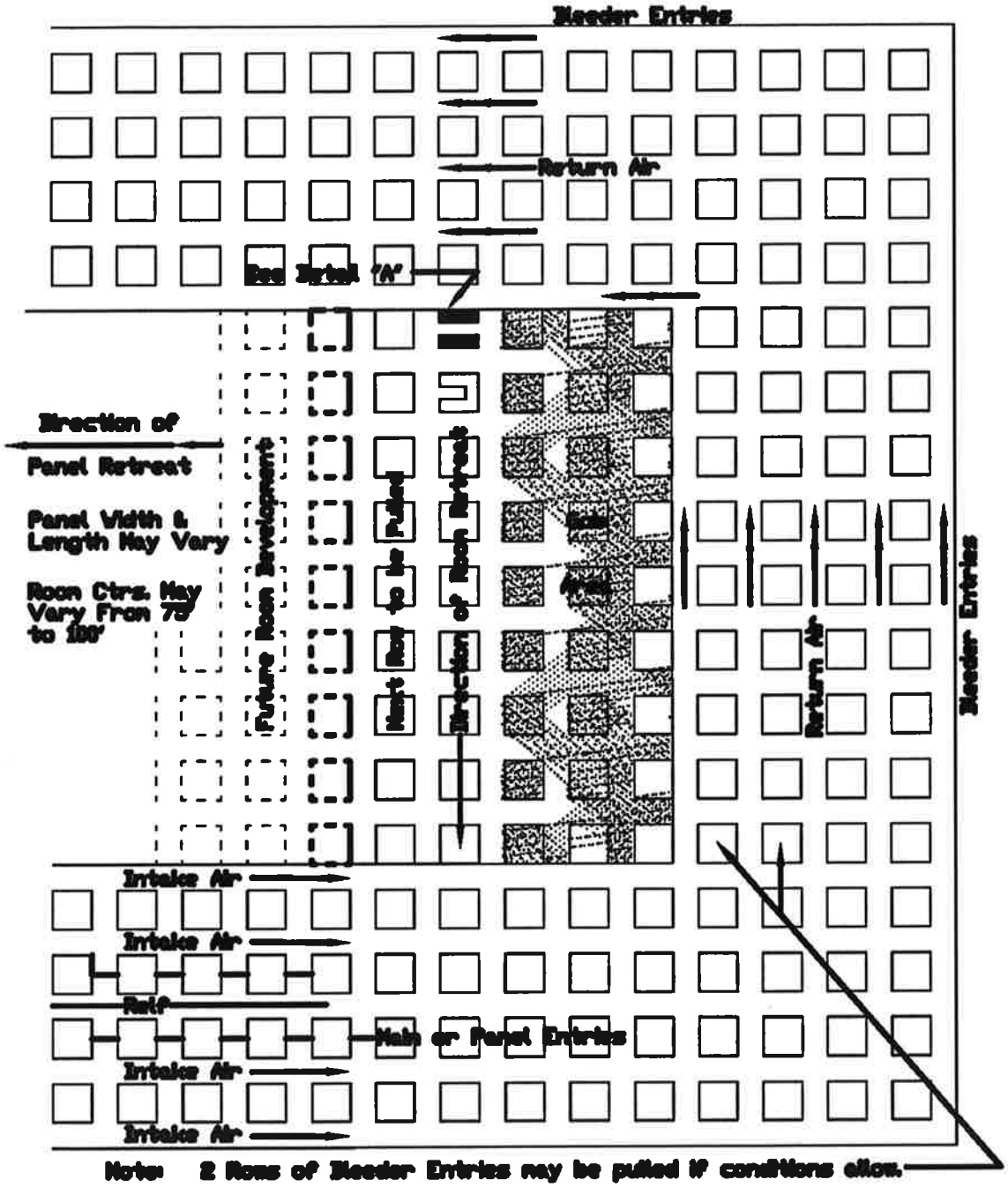

Scale: 1 in. = 200 ft

Figure 5-1 Typical Panel Recovery

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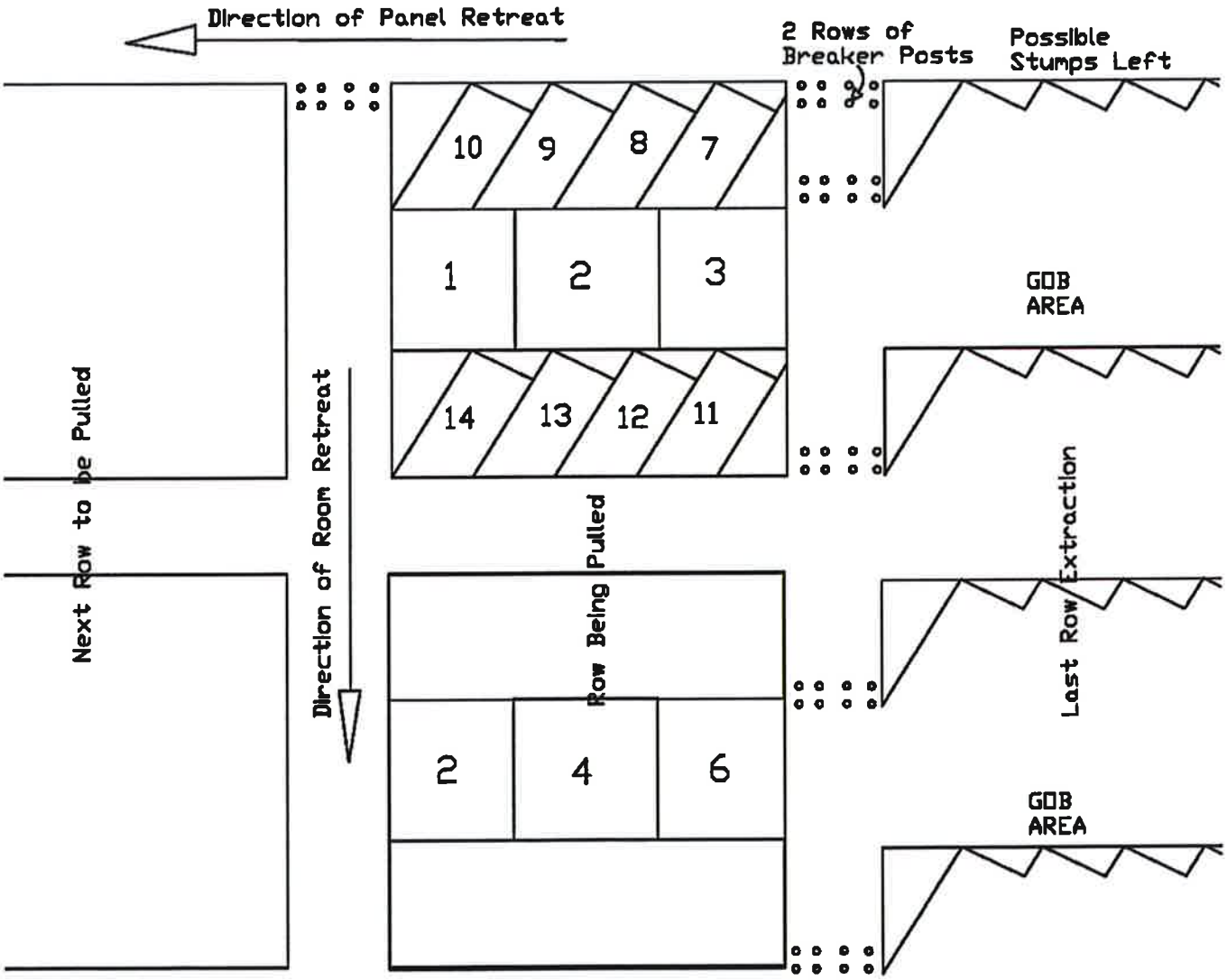
Note: Room centers may vary from 75' to 100'.
Typical cut sequence is as shown. May vary due to condition



Scale: 1 In. = 200 Ft.

Figure 5-2 Typical Pillar Extraction

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Ventilation, Water System, Dust Suppression, and Dewatering

Ventilation. A separate fan with adequate capacity supplies air to each of the mines. Intake air is carried in the entries on one side of a set, while return air is carried through the entries on the other side. Air is directed through the mine by stoppings, doors, overcasts, regulators and brattice cloth. After sweeping the working faces of each section the air is directed into the return air courses and out of the mine. Little or no methane gas is generated in any of the Blackhawk seams.

Water System. Water generated in the mine is collected in sumps and used at the mine. Some water from the roof is collected and used as culinary water outside for use in the bathhouses and as drinking water in the offices (Appendix 5-B). Tests for portability are required and made quarterly.

Dust Suppression. Water also serves for sprays on the machines at the working faces, on the coal at belt heads, transfer points and for the tipple for dust suppression.

Dewatering. Water generated is used or contained within the mine, and excess water is discharged to Bear Creek. Mine dewatering is governed by the mine discharge permit (Appendix 7-B).

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Equipment Selection

Castle Valley Mining LLC, will utilize the equipment described in the following list for its mining operation and will acquire any additional equipment as required to maintain a sound mining operation.

Surface Equipment
- vibrating screens
- crushers
- conveyors
- front end loaders
- road grader
- crawler tractor
- fork lift

Recovery Rate

The recoverable coal reserves were estimated by multiplying the in-place reserve by a recovery factor of 70 pct.

The operation will produce 750,000 to 2,000,000 tons of raw coal per year with 2 to 4 miner sections working 360 days. This is 3,000+ to 8,000+ tons per day with 2 to 4 production shifts operating. The rate of production (considering a lower rate during the initial buildup years plus the tonnage still to be mined in the area of old workings) will make the projected mine life approx 29 years.

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Table 5-1 Coal Reserves - Bear Canyon Mine

Reserve Area	Seam	Coal Reserves (tons) In-Place	Coal Reserves (tons) Recoverable
Federal Lease (U-46484)	Blind Canyon	5,093,206	1,586,852
	Hiawatha	7,015,758	3,085,990
	SUBTOTAL	12,108,964	4,672,842
(U-61048)	Tank	490,470	0
	Hiawatha	7,540,784	2,942,416
	SUBTOTAL	8,031,254	2,942,416
(U-61049)	Tank	10,027,191	6,433,459
	Blind Canyon	0	0
	Hiawatha	18,428,989	11,822,475
	SUBTOTAL	28,456,180	18,255,934
(U-024318)	Blind Canyon*	52,763	0
	Hiawatha	0	0
	SUBTOTAL	52,763	0
(U-024316)	Tank	1,099,006	0
	Blind Canyon	1,112,202	366,089
	Hiawatha	1,770,113	959,124
	SUBTOTAL	3,981,321	1,325,213
(U-020668)	Tank	600,036	318,706
	Blind Canyon	2,647,894	774,205
	SUBTOTAL	3,247,930	1,092,911
(U-38727)	Tank	4,300,059	2,958,627
	Blind Canyon	3,779,496	1,468,042
	SUBTOTAL	8,079,555	4,426,669
Fee Land	Tank	7,836,811	3,986,939
	Blind Canyon	9,395,909	3,808,970
	Hiawatha	2,568,465	1,284,232
	SUBTOTAL	19,801,185	9,080,141
Total Tons	Tank	24,353,573	13,697,731
	Blind Canyon	22,081,470	8,004,158
	Hiawatha	37,324,109	20,094,237
TOTAL		83,759,152	41,796,126

NOTES: 1. Reserves based on latest projections (7/21/06) submitted to the B.L.M. in the R2P2 update.
2. Current permit application will allow for mining of Lease U-024316 in the Tank Seam only until additional hydrologic and geologic information can be obtained.

- Blind Canyon Seam reserves mined out in 1984-1985.

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R645-301-524 Blasting and Explosives

Castle Valley Mining LLC, commits to follow all of the regulations in Section R645-301-524 that apply to its operation.

R645-301-525 Subsidence Control Plan

Subsidence monitoring points are shown on Plate 5-3. Appendix 5-C contains the subsidence monitoring and control plan.

525-300 Subsidence Control

Subsidence control is outlined below and in Appendix 5-C

Barrier Pillars

Pillars of coal generally are left underground to protect surface or underground features which must be maintained and protected for the life of the mine (main entries) or permanently (oil or gas wells). The size of some is specified by law; others are designed by the operator to provide the protection needed.

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Property Boundaries

Area boundaries of individual leases and fee property are shown on Plate 1-3. Protection of boundaries and property adjacent to the permit area is provided by continuous barrier pillars a min of 100 ft wide. This is wide enough to prevent subsidence across the boundary resulting from angle of draw._On the north end of the permit boundary no barrier will be left because this area is adjacent to the Hiawatha permit boundary which is part of the Bear Canyon LMU so mining could potentially cross from one permit boundary into the other uninterrupted.

Outcrop Protection

In most areas, coal outcrops are buried and are not visible from the surface. Outcrops are either covered to some depth with overburden or, in many areas; the coal has been burned for some distance from the surface. Where neither of these situations exist, routine tests of the coal may show that it has been "weathered" or "oxidized" and mining will be stopped within 200 ft of the outcrop.

Barrier pillars to protect main and sub- main entries have been made large enough (100 ft or greater) to assure protection of the entries for their useful life. When the area serviced is mined out, entry pillars will be recovered on the way out.

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Protection of Natural Surface Structures & Streams

The primary natural structures that need protection are escarpments and streams. Escarpment locations are shown on Plate 5-3 and 5-3A, and a discussion of their protection is included in Appendix 5C. The only stream channels which lie over the minable portion of the permit area is Bear Creek, where it flows through Federal Lease U-024316, and Fish Creek where it flows through a portion of Federal Lease U-61049 and private property. See Appendix 5-C for an explanation of the protection zone delineation and method of protection. Adequate barrier zones will be left to protect adjacent stream channels, such as Bear Creek. Downstream channels are protected from disturbed area runoff contamination by utilization of sediment ponds. Temporary sediment controls i.e.; silt fences, straw bail dikes, etc. will be installed and vegetation will be reestablished as required in the event of impacts by escarpment failure.

In areas where coal burn exists the burning of the coal as caused natural subsidence causing failure of some natural structures. A barrier left adjacent to these areas would cause an interruption between the natural and man made subsidence creating greater impacts to the surface. Because of this no barrier will be left in these areas unless it is needed for roof stability or temperature considerations, in which cause the minimum possible size will be used.

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Protection of Manmade Features (Surface & Subsurface)

Man made features and structures which exist on the minable portion of the permit area consist of a hunting lodge which exists in the Wild Horse Ridge Area. There are some forest trails but they are all located beyond the coal outcrops. Maximum coal recovery in the controlled uniform manner planned for this mine should result in even surface subsidence with minimal disturbance.

Buildings within 1,000 ft of Permit Area. A hunting lodge lies within 1,000 ft. of the permit area. Adequate barrier protection will be provided to prevent subsidence of this structure. No buildings have been identified above the potential subsidence zone.

Existing Public Roads. The main access road to the property is a public road. It provides access from Huntington Canyon to the mine. The lease agreement between C.W. Mining and C.O.P Coal Development requires Castle Valley Mining LLC, to allow access through the mine site for representatives of the property owners and Forest Service. The access road to the Wild Horse Ridge area consists of an existing road used to access a private hunting cabin which is owned by Sportsman's, the lessee of the hunting rights to the property. The main road is posted with speed control and general traffic control signs. When mining has been completed, the roads which are not approved to remain for post-mining land use will be reclaimed.

Protection of Oil, Gas and Water Wells

There are no active or abandoned oil or gas wells within the permit boundary.

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R645-301-526 Mine Facilities

526.100 Existing Mine Structures and Facilities

This is addressed in Appendix 5-A

526.200 Utility Installation and Support Facilities

The only public utilities located on or near the mine site are Big Bear Spring and Birch Spring. Castle Valley Mining LLC, will monitor these springs for any adverse affects related to the mining operation as described in Chapter 7 R645-301-731.200

526.300 Water Pollution Control Facilities

This is addressed in R645-301-732, R654-301-733, R654-301-738, and R645-301-744.

526.400 Air Pollution Control Facilities

This is addressed in R645-301-420.

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R645-301-527 Transportation Facilities

There are eleven primary roads in the permit area: Bear Canyon Haul Road, Portal Access Road, Tank Seam Access Road, Shower House Road, road to Sediment Pond A, Tipple Access Road, Shop Road, No. 3 Mine Access Road, No. 4 Mine Access Road, and the No.1 and No.2 Conveyor Access Roads. All roads are shown on Plates 5-2. Road profiles and typical cross sections are shown on Plates 5-4. A description of all roads is included in Appendix 5-F, along with maintenance procedures. Construction of the Tank Seam Access Road is discussed in Appendix 5-G. Construction of the Wild Horse Ridge road is discussed in Appendix 5-J. Construction of the Wild Horse RidgeTank Seam Road is discussed in Appendix 5-K. Construction of the Mohrland Road is discussed in Appendix 5-L. Construction of the No. 4 Mine Access Road is discussed in Appendix 5-K.

The mine area is approached on the Bear Canyon Haul Road. The #1 mine portal is reached on the Portal Access Road. The Tank Seam Portal is reached on the Tank Seam Access Road. The Wild Horse Ridge area is accessed on the No. 3 Mine Access Road. The WHR Tank Seam is accessed on the No. 4 Mine Access Road. Six other primary roads provide access; to the Sediment Pond A, the coal preparation facility (tipple), the shop, the Wild Horse Ridge conveyor belts, and to the Shower House.

The Bear Canyon Haul Road, No. 3 Mine Access Road, and part of the No. 4 Mine Access Road are also used by customers of Sportsman's Hunting to access a hunting cabin, which exists in the right fork of Bear Canyon. This non-mining recreational use of the road occurs primarily from May until November, typically 2-3 times per week. A lease agreement

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between Sportsman's and C.O.P.D. provides them with a right-of-way access to the cabin in Bear Canyon.

There is one ancillary (jeep trail) road shown near the portal on Plate 5-2C, which was in existence prior to C. W. Mining and Castle Valley Mining LLC, activities and has not been used by C. W. Mining as well as Castle Valley Mining LLC, for mining and reclamation activities.

Traffic on the haul road consists primarily of coal haul trucks, mine personnel passenger vehicles, vendor cars and trucks, and other passenger and recreational vehicles. The traffic on the shop and portal access roads and No. 3 Mine access road consists of supply tractors, vendor trucks and company vehicles, with some additional passenger and recreational vehicular use.

Roads are maintained in such a manner that the performance standards will be met throughout the life of the entire transportation facility, including maintenance of the surface, shoulders, parking and side areas, and erosion control structures for safe and efficient utilization of the road In the event a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred.

The road surfacing material for the No. 3 Mine Portal Access Road, No. 4 Mine Access Road, and Wild Horse Ridge Conveyor Access Roads will consist of in-place material and/or road base (gravel) material. This material has proven adequate on the other Bear Canyon Mine Access Roads for the type of traffic which will use the roads, consisting of pickup trucks and mine vehicles and tractors. Soil analyses of the in-place material for the Wild Horse Ridge area is presented in Appendix 2-F and Appendix 2-G. Soil analysis of the road base material was

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analyzed during the analysis of in-place plant growth material, presented in Appendix 2-D. This material is represented by the soil samples identified as SHP-1, SHP-2 and PAR-1 (Soil segment from 0-0.5 ft.). Sample locations are shown on Plates 2-3B, 2-3C and 2-3D. None of the investigations revealed any acid- or toxic- forming materials. Any coal waste material encountered during the portal face-up process will be treated as described in R645-301-528, and will not be used in the fill or as road surface material.

Reclamation of roads and parking areas is treated in the same manner as other working areas. Any asphalt or treated surfaces will be removed prior to rehabilitation upon completion of mining. Roads which are permitted to remain in place will be fit with drainage control structures adequate for post-mining use. See Plates 5-4, 5-5 and 5-6, and road agreements under Appendix 5-F.

R645-301-528 Handling and Disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste

528.100 Coal Removal, Handling, Storage, Cleaning and Transportation Areas and Structures

Coal is carried from the mines by conveyor belt to surge bins, and then conveyed to the sizing and crushing plant (tipple), where the lump is removed and diverted to the lump bin or seasonal storage area. The rest of the oversized is crushed, and then sized to meet the various requirements of different customers. It is then conveyed to the truck load-out bins or the stockpile area.

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1Coal will be transferred from the Tank Seam to the Blind Canyon Seam of the Bear Canyon No. 1 Mine through a 7 ft diameter borehole, which has been bored from the surface adjacent to the portal. The conveyor from the portal and the drop tube structure will be enclosed. Air cannons will be placed on the outside of the drop tube to prevent the wedging of coal in the tube. A 7 ft diameter borehole will be used in Wild Horse Ridge to transfer coal from the Tank Seam (#4 Mine) to the Blind Canyon Seam (#3 Mine). This borehole, however, will be constructed underground.

Coal from the #3 mine will be transferred from the portal area to the tipple using an overland conveyor. This conveyor is shown on Plates 5-2C, 5-2F and 5-2G. The conveyor will either be suspended in the air from cables or set on stands on the ground. Because the Wild Horse Ridge area is an important migratory path for the deer and elk, restriction of this migration by the conveyor in areas where it sets on the ground is a concern. To mitigate this potential problem, the stands will be constructed to suspend the bottom of the conveyor belt a minimum of 36" above the ground. A typical cross-section of the conveyor is shown in Appendix 7-K, Figure 1. All moving parts are contained within the spill pan, so there will be no danger to wildlife passing under the conveyor.

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528.200 Overburden

Overburden was removed from areas in the vicinity of mine portals and used in the construction of the portal pads. The material will be utilized to reclamation to cover the highwalls and to reshape the slopes to approximate their pre-mining condition as described under R645-301-540.

528.301 Excess Spoil

No excess spoil is proposed to be generated during the term of this permit. Castle Valley Mining LLC, commits to not conduct any activities that could generate excess spoil unless a plan is submitted and approval granted by the Division.

528.320 Coal Mine Waste

Coal mine waste such as separated waste rock will be temporarily stored at the designated site on the main storage pad shown on Plate 5-2C. Storage time in this area will not exceed 15 days. Each time waste rock is placed in the area, a survey will be conducted to determine the approximate volume of material being placed in the designated area. A log will be kept of the survey which includes a sketch of the material pile and placement dates and will be available onsite for review. In-Mine roof sample analyses are included in Appendix 6-C. A maximum volume of 150 yd^3 of material will be stored in the temporary area at any given time.

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The material will then be returned underground and either crushed prior to transportation to use as underground road base material, or placed underground in dry areas in accordance with MSHA regulations. Samples will be taken during future development in accordance with R645-301-623.100.

Roof and rock materials developed underground during mining and related tunneling activities will be placed underground. When relocation of these materials is required underground, they will be placed in "dry" areas where there are no active seeps, sumps or drippers.

Bear Canyon #3 and #4 Mines. Coal Mine Waste such as separated waste rock which is generated from the Wild Horse Ridge operation and can not be used as described above will be hauled to Hiawatha (C1/007/011) and placed in Refuse pile 1 (MSHA ID# 1211-UT-09-02157-04). All material placement will comply with the requirements of the Hiawatha Coal Company's Coal Mining and Reclamation Plan, Section R645-301-528.

Prior to being shipped to the Hiawatha Mine, waste material will be tested for acid and toxic properties in accordance with Table 5O-1. Any material found having acid and toxic properties will be disposed of in the Hiawatha Refuse pile 1 in accordance with the Hiawatha MRP requirements for acid- and/or toxic-forming material. For sediment control, runoff from any material placed in the temporary storage area reports to and is contained in sediment pond "A".

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528.321 Return of Coal Processing Waste to Abandoned Underground Mines

No coal processing waste has been, or is proposed to be, disposed of in abandoned underground mine workings. No coal processing waste will be disposed of in abandoned underground mine workings without the express approval of the Division and MSHA.

528.322 Refuse Piles

Castle Valley Mining LLC Currently has no permanent refuse piles.

528.323 Burning and Burned Coal Mine Waste

MSHA has verbally notified Castle Valley Mining LLC that a fire-extinguishing plan for the temporary rock pile is not required by their office, since the area utilizes minimal storage, which is temporary. In the event a fire does occur, however, it will be extinguished by spreading the material out on the storage pad and allowing it to burn out and/or distinguishing the fire using water from the belt tower water supply lines.

528.330 Non-Coal Mine Waste

Non-coal waste generated in the operation of the mine is placed in metal dumpsters which are strategically located on the property. A local trash collector is contracted to replace these bins when they are near capacity. Appendix 5-D addresses a comprehensive plan to handle toxic or contaminated material.

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528.340 Underground Development Waste

Historically there has been a minimal amount of underground development waste produced. This waste has been associated with the development of portal entries or vent shafts and in each case the waste has been used in the construction of the portal sites or used within the mine to fill low areas. This same process will be followed for all future development waste.

528.400 Dams, Embankments and Other Impoundments

Castle Valley Mining LLC currently has only four dams, embankments and impoundments. All 4 of them are sediment ponds. Three sedimentation ponds are used to control the main Bear Canyon area (Plate 7-1B), a fourth sedimentation pond on the Bear Canyon #3 mine portal pad, and additional ASCA structures. A slope stability analysis for Sediment Pond "A" is shown in Appendix 7-E. The properties of the embankment material for the three ponds are similar due to the close proximity of the three ponds to each other and the native material being used for the pond embankments. The slope stability analysis, which would apply to ponds "B" and "C" also, shows that the minimum safety factor for the pond slopes is 2.8. This is calculated using a slope of 2H:1V. Slopes will be constructed at a slope of 2H:1V or less, providing a 2.8 safety factor. This is greater than the minimum required safety factor of 1.3. These facilities will be maintained as long as it is required to meet the effluent limitations of applicable federal or state laws for runoff or drainage. When their usefulness is ended, they will be removed and the sites reclaimed as described previously.

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The fourth pond treats the #3 mine portal pad. A slope stability analysis for the embankment material in this area is shown in Appendix 5-J, pg. 3O-32. This embankment will also be constructed at a slope of 2H:1V, providing a minimum safety factory of 1.46, which is greater than the required safety factor of 1.43.

In areas where sedimentations ponds are not used, additional ASCA controls are used. These controls are discussed in detail in Appendix 7-K.

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R645-301-529 Management of Mine Openings

Exploratory Holes, Bore Holes, And Wells. Upon abandonment of drilling operations, all drill holes are to be cemented with an approved slurry. The slurry mixture will consist of 5.2-5.5 gal. of water per bag of cement. Castle Valley Mining LLC is committed to plugging all openeings as described in R645-301-551

Shafts. The shafts will be filled from bottom to collar with non-combustible material. A cap consisting of a 6 inch thick reinforced concrete slab will be used as a seal. The cap will be equipped with a 2 in. dia vent pipe and will extend for a distance of 5 ft below the surface of the shaft collar.

Mine Entries. Seals will be installed in all entries as soon as mining is completed and the mine is to be abandoned. Seals will be located at least 25 ft inside the portal mouth entry. Prior to installation all loose material within 3 ft of the seal will be removed from the roof, rib and floor. The mine entry seals will be made of solid concrete blocks (average minimum compressive strength of 1,800 lbf/in^2 tested in accordance with ASTM C140-70) and mortar (1 part cement, 3 parts sand and no more than 7 gallons of water per sack of cement) to form a wall two blocks thick.

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Seals will be installed in the following manner:

a. The seal will be recessed at least 16 in. deep into the rib and 12 in. deep into the floor. No recess will be made into the roof. The blocks will be at least 6 in. high, except in the top course and 8 in. wide.

b. The blocks will be laid and mortared in a transverse pattern. In the bottom course, each block will be laid with its long axis parallel to the rib. The long axis in succeeding courses will be perpendicular to the long axis block in the preceding course. An interlaced pilaster will be constructed in the center. The seals will have a total thickness of 16 inches. Where conditions permit, the portal seals will be graded to conform with existing surface contours and seeded.

The opening in front of the wall will be filled with non-combustible material as above and the portal and entire exposed seam on the highwall will be covered with 6 to 8 ft of noncombustible material, graded, covered with suitable material and seeded. The portal fill material will be put in place with a load, haul, dump (LHD) unit to ensure proper backfilling. For illustration of a typical seal, see Figure 5-3. Temporary seals are discussed in R645-301-515.300.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening, These devices shall be periodically inspected and maintained in good operation condition by the person who conducts the underground coal mining activities.

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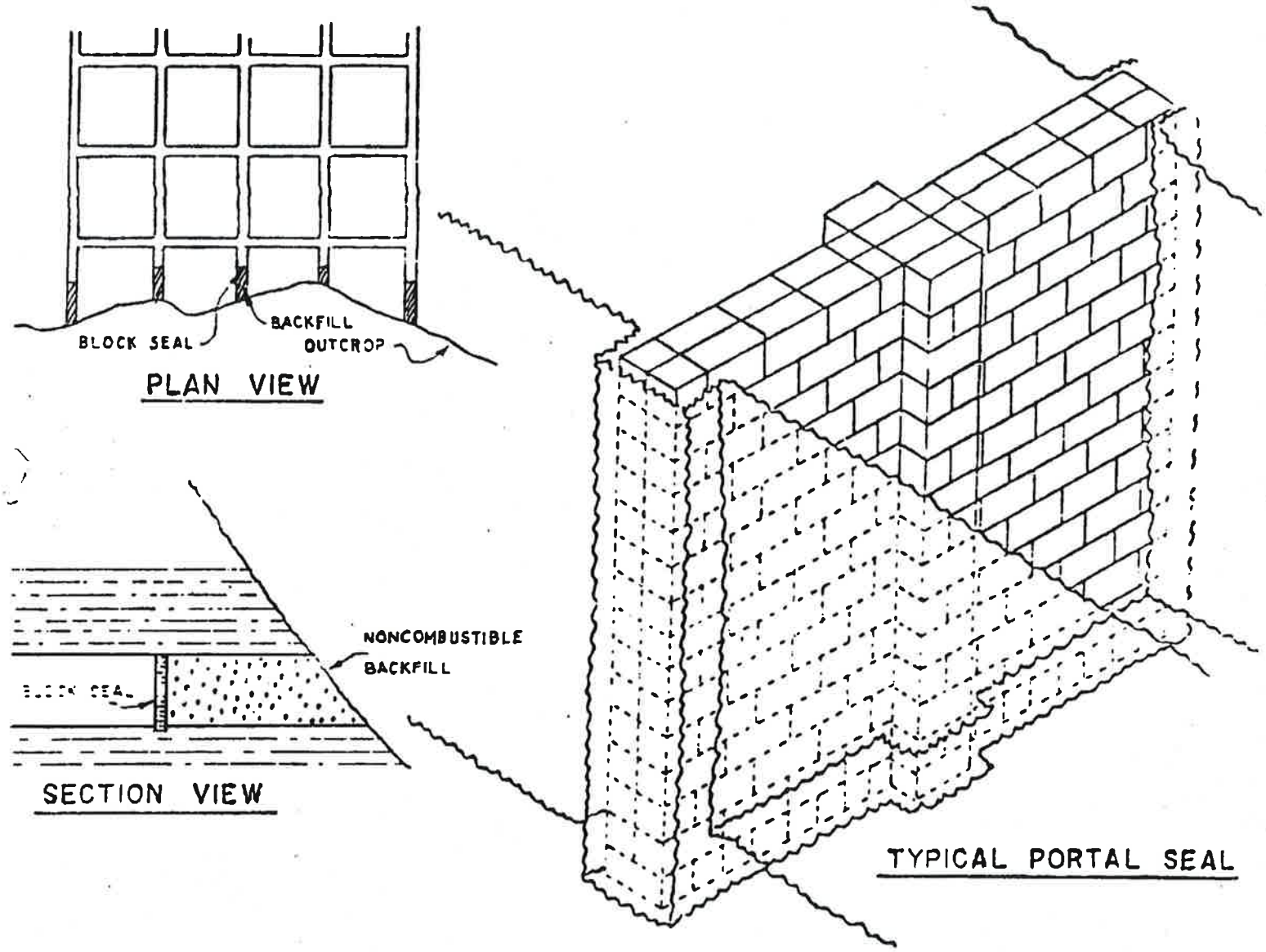

Figure 5-3 Typical Portal Seal

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R645-301-530 Operation Design Criteria and Plans

531 General

General plans for sediment ponds are given in R645-301-528.400. Water impoundments are discussed in Chapter 7.

532 Sediment Control

Sediment control for each specific disturbed area is discussed and referenced under R645-301-526, and R645-301-732.

533 Impoundments

This is addressed in R645-301-528.400

534 Roads

This is addressed in R645-301-527. A reclamation timetable is given in R645-301-540.

535 Spoil

This is addressed in R645-301-514

536 Coal Mine Waste

This is addressed in R645-301-513, R645-301-514, and R645-301-528.

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537 Regraded Slopes

537.100 Geotechnical Analysis

Slope stability analysis's are given in Appendix 5-G for the Tank Seam, Appendix 5-J for the WHR Blind Canyon Seam, Appendix 5-K for the WHR Tank Seam, and Appendix 5-L for the Mohrland area.

537.200 Settled and Revegetated Fills

Parts of the mine access roads will not be restored to its original contour, but will be left in place for post-mining land use. This is discussed in R645-301-242.

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R645-301-540 Reclamation Plan

R645-301-541 General

541.100 Reclamation of All Areas

Upon completion of mining on the permit area, Castle Valley Mining LLC will reclaim all disturbed surface areas as diligently and rapidly as possible, to restore the property to pre-mining and/or alternative post-mining uses. All reclaimed areas will be maintained during the liability period for at least 10 years.

The initial step in the reclamation plan is to seal all large-diameter openings by backfilling these openings with non-combustible material (earth & small rock), adjacent to the portals. The seals will be designed such that mine drainage, if any, will not enter surface water bodies. For a more detailed description of the sealing of openings, see R645-301-529, Sealing of mine Openings, Drill Holes, Wells, etc.

The next step in reclamation would be the removal of all surface structures, equipment and road blacktop. Once this has been accomplished, all solid waste generated in the abandonment operation will be collected and disposed of in an approved manner. Additional information concerning this aspect of the reclamation plan is present in R645-301-541.300 (Surface Structures), and R645-301-542.600 (Roads).

Proposed access roads to the mine portals will be reclaimed and revegetated. This will accomplish a dual purpose of controlling runoff and re-vegetating the hillsides with vegetation

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comparable to existing growth. Roads proposed to remain in place for post-mining use will be re-graded to the post-mining configuration and fitted with post-mining diversions. A detailed description of the roads is given in R645-301-542.600 (Roads).

Backfilling of the subterranean portion of the silos, holes and depressions will be the next reclamation activity, Once the backfilling is completed, the disturbed areas will be graded and recontoured. Topsoil materials will be redistributed as defined in Chapter 2 and then seeded or planted as described in Chapter 3, before the next growing season. A suitably permanent and diverse vegetation cover will be established on all affected areas of land.

The post-mining land uses will be grazing, recreation, wildlife and timber.

541.300 Removal of Structures

All surface facilities including support facilities will be removed and the areas reclaimed to prevent damage to fish, wildlife, and associated environmental values.

Mine Operational System Removal. Systems such as domestic water will be phased out and removed or buried. All structures, tanks and lines will be removed and properly disposed. Buried lines will be removed where feasible; otherwise, lines will be severed and left in place beneath a minimum of 4 ft of fill. Leaving lines in place will cause less disturbance than digging in some cases.

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Excess Coal Spoil and Waste Disposal. Any excess coal spoil and waste material on-site at the time of reclamation will be placed and compacted against the cut slopes and covered with a minimum of 2 ft of non-toxic, non-acid material. If testing indicates that the material has acid or toxic forming potential it will be covered with a minimum of 4 ft of non-toxic, non-acid material. These materials will be placed in areas away from post mining drainage structures.

Solid (Non-Coal) Waste Disposal. The following are solid waste items expected during reclamation, and methods of disposal:

a. Concrete. All concrete (estimated at approximately 900 cu yds) will be broken up into pieces not to exceed 3 ft x 3 ft and placed against the highwalls mentioned above, and covered with at least 3 ft of backfill material. (This category also includes cinder blocks). Asphalt material will be taken to the Nielson Construction landfill;

b. Culverts and Pipe. All such material will be removed, and either salvaged or taken to the Nielson Construction Landfill in Emery County;

c. Scrap Metal. All scrap metal will be removed, and either salvaged or taken to the Construction Landfill;

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d. Wood, paper, trash. All such items will be collected during the area cleanup during and after reclamation and then taken to the Nielson Construction Landfill for disposal. Wood items are identified as extraneous building material, timbers, block wedges and other mining material, and do not include any material occurring living or dead vegetation.

Note: The Nielson Construction Landfill is the designated disposal site for all non-coal solid waste items to be removed from the site.

R645-301-542 Narrative, Maps, and Plans

542.100 Timetable

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

		Accumulated Time
a.	Seal Portals - 2 weeks	2 weeks
b.	Remove Structures - 34 weeks	36 weeks
c.	Soil Replacement and Ripping - 10 weeks	46 weeks
d.	Channel Restoration - 25 weeks	71 weeks
e.	Revegetation - 2 weeks	73 weeks

The above reclamation tasks can, therefore, be completed within 73 weeks, weather permitting, following the start of reclamation activities. Revegetation will be scheduled for completion in the fall of the final season of reclamation.

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542.200 Backfilling and Regrading

General

The objective of the proposed backfilling, soil stabilizing, contouring and grading process is to achieve a reclaimed surface which will provide a variety of topographic features and enhance post-mining land use.

The steps to be taken in the backfill, soil stabilization, compaction, contouring and grading problems are described in the following subsections. Stability analysis of highwalls and backfilled areas are discussed in Appendix 5-H.

Backfilling operations, utilizing equipment such as rubber-tired scrapers, bulldozers, backhoes, front-end loaders and dump trucks, will be conducted in the portal and treatment facility areas. Holes or depressions will be filled when the mining operation is concluded. Compaction operations utilizing equipment such as sheeps-foot tampers will be conducted to stabilize all filled holes and depressions.

In general, the backfilling and grading operation will take place in the following manner:

a. All mining portals will be sealed and backfilled as previously described in R645-301-529.

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b. Solid waste generated in the facilities removal will be collected and disposed of as identified in R645-301-541.300. See Appendix 5-D for toxic materials and handling.

In disturbed areas which contain coal fines from current operations and are not proposed to be regarded, the coal fines will be removed to pre-mining levels. Methods of removal will consist of either vacuuming (if justified by large quantities), or by washing down the area by high-pressure water hoses. The wash down procedure is particularly effective on rock and rocky slopes. All other extraneous debris from the operations will also be removed from the areas. Disposal of all materials will be as described in R645-301-529.

It should be noted that the existence of small to moderate amounts of coal fines has not been established as detrimental to either soils or vegetation; therefore, amounts less than the 50 pct figure cited above will not be removed.

c. A backhoe and dozer will work in conjunction to remove the outer edge of the recontoured operational benches and compact it against the cut slopes. This will be accomplished by the backhoe reaching over the edge of the bank approx 20 ft. and pulling the material back. The dozer will then push and compact this material from the cut slope outward to reach a bench slope of approx 1v:3h for drainage purposes and a maximum of 1v:2h on slopes outside of drainage areas. Culverts will be removed by excavating the material over the culvert, extracting the pipe, and backfilling the area.

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d. This operation will start on the upper bench and work across the bench to the upper access road.

e. The backhoe and dozer will work in the same manner to eliminate the access road, working down to the lower pad. A typical cross-section of the reclaimed road cut is shown in Figure 3.6-2.

f. Steps d-f will be repeated from the Tipple Pad on down the canyon reshaping the mine yard and disturbed area to the configuration shown on Plates 5-6, Post-mining topography. The mine access road below the No. 3 Mine Access Road will be regraded and fitted with post-mining diversion structures as shown on Plates 5-6. Diversion designs are shown in Appendix 7-H. Asphalt road surfacing material from the scalehouse pad will be excavated and disposed of at the Nielson Construction Landfill in Emery County. All roads which are to be reclaimed will be closed to traffic during reclamation. The reclaimed road design will be the same as the operational design, and is shown on Plate 5-4.

g. As backfilling and grading is completed, operational areas will be scarified by gouging to a depth of approximately 8 in. with a trackhoe. All areas will be gouged to increase surface roughness. This will reduce compaction and prevent topsoil slippage, and improve soil retention and vegetation establishment in the gouges.

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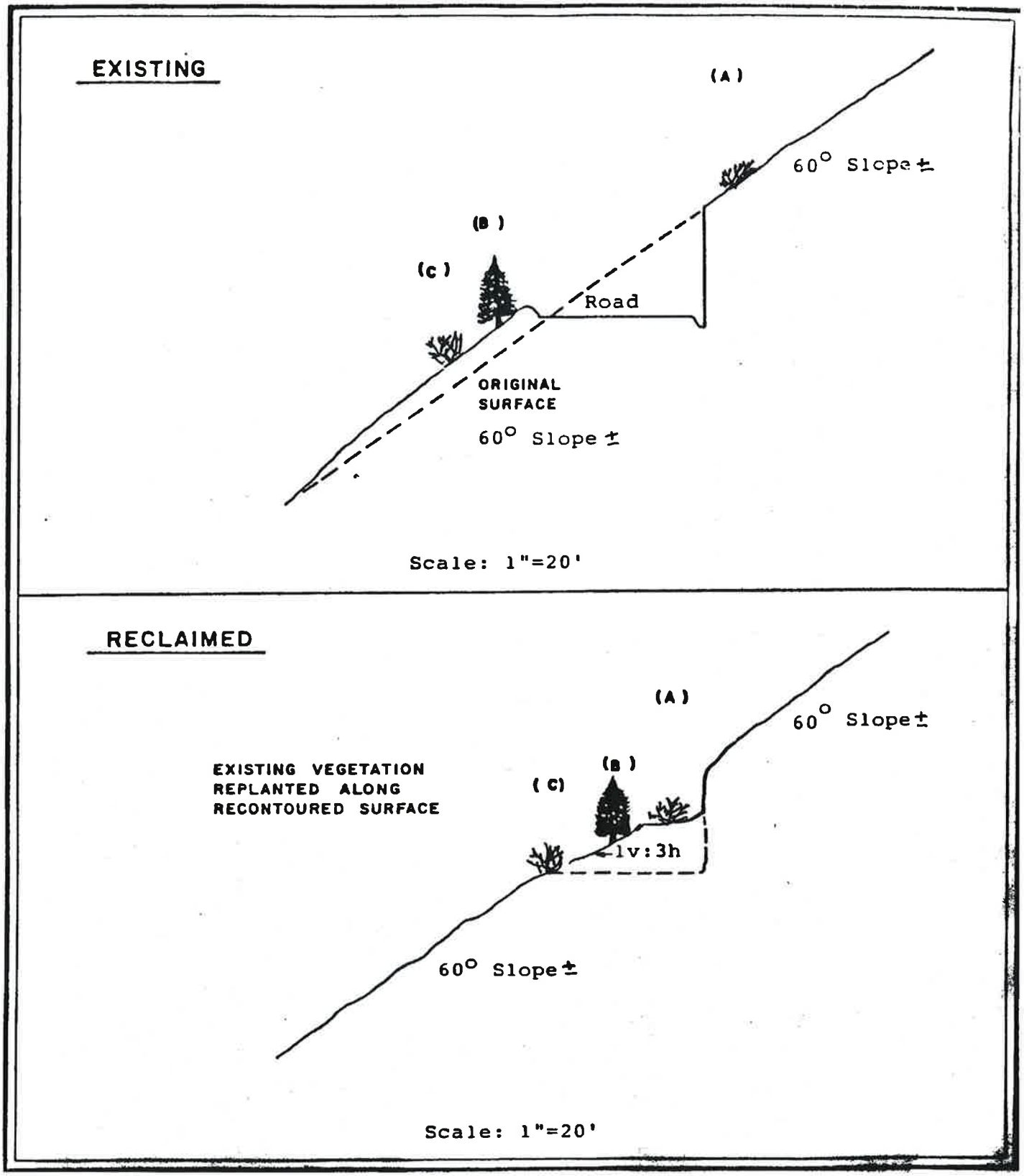

Figure 5-4 Typical Slope Reclamation

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Tank Seam Access Road Reclamation

This section provides a detailed description of the backfilling and grading plans for the Tank Seam Access Road and Portal Area. Reclamation will be scheduled to allow revegetating of the area in conjunction with backfilling and grading.

As soon as the Tank Seam portals are sealed and all facilities removed, the borehole will be filled using the cuttings from initial construction of the borehole. These cuttings will be stored underground in the Blind Canyon Seam during operation. Backfilling will begin at the Tank Seam Portal Area. Backfilled material shall be placed by heavy equipment such as a front-end loader and track backhoe in lifts not exceeding 18 inches and compacted as described on page 5H-27. Lifts will be placed parallel to the slope of the road until the final lifts are reached which are wide enough for the equipment to drive on. Final lifts will be placed by a backhoe and compacted in a sloping manner as shown in Figure 5-5.

In areas where fill material is located on the outslope, fill material will be pulled back using a backhoe and the material incorporated into the lifts placed on the cut bench. Where large fill areas exist, the fill will be excavated in a reverse sequence from the placement described in Appendix 5-G. This will allow the fill to be removed and then reclamation to proceed from the bottom of the slopes toward the top, as the "pilot cut" is reclaimed.

Fill material will be excavated from around the large boulders, which were left in place during construction using a backhoe, and the approximate original contour of the slope will be restored. Channels will be restored in the large fill areas by duplicating the configuration shown in Appendix 7-H.

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As the lifts are placed and fill material retrieved, topsoil will be redistributed on the outslope and upper lifts and spread using a backoe. Boulder sized rock fragments will be embedded into the surface in the upper lifts as described on page 5H-27 in order to obtain, at a minimum, a surface rock cover of 32.75 percent, which equals the reference area cover shown on page 5A-24.

Using the bucket of the backhoe, the surface will then be ripped and scarified, creating horizontal pockets approx. 8 to 12 inches deep to aid in water retention for revegetation. The bucket will also spread the topsoil at the top of the cut in a manner to blend the reclaimed slope with the natural slope above.

As backfilling progresses down the road, seed will be placed on the completed slopes behind backfilling by hand. Following seeding, erosion control matting similar to Excelsior S-2 or equivalent will be placed on the slopes by hand, and stapled to the reclaimed surfaces.

Reclamation will progress in this manner to the bottom of the Tank Seam Access Road.

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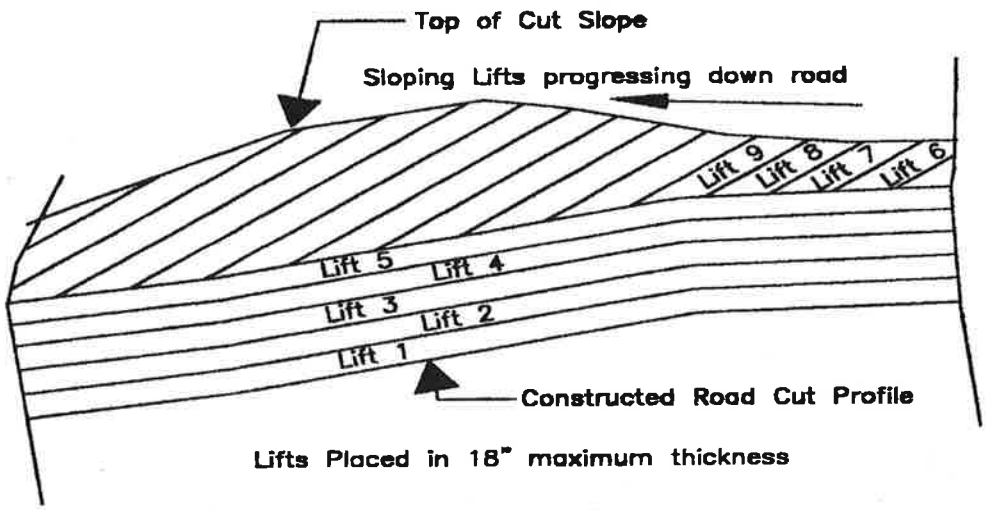
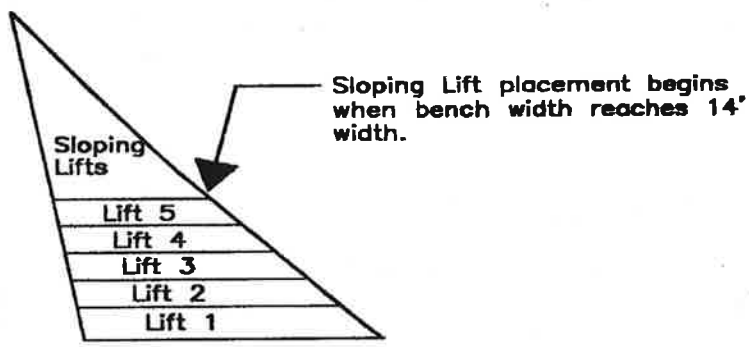


TANK SEAM ACCESS ROAD PROFILE



CROSS–SECTION OF TYPICAL LIFT SEQUENCE

Figure 5-5 Typical Compaction Lift Sequence

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Wild Horse Ridge Reclamation Plan

This section provides a detailed description of the backfilling and grading plans for the Wild Horse Ridge portal pads, conveyor roads and access roads. Reclamation will be scheduled to allow reseeding of the area immediately following backfilling and grading.

As soon as the portals are sealed and all facilities removed, backfilling will begin with the portal pads. ASCA Controls will be put in place in accordance with BTCA "2" controls, described in Appendix 7-K. Due to the remoteness of the area, Pond "D" will be removed during the initial backfilling and grading to avoid any future re-disturbance. A silt fence will first be placed at the base of the fill area across the drainage, as shown on Plate 5-6G. Fill material in the bottom of the canyon will then be excavated, including pond "D". Any highwalls created along the seam outcrops will be backfilled and the coal seams will be covered.

Material will then be placed along the portal pad access roads, backfilling the cut slope. Material shall be placed by heavy equipment such as a crawler dozer, front-end loader and track backhoe in lifts not to exceed 36 inches and compacted as described in Appendix 5-J. Material will first be excavated from the West side of the Blind Canyon Pad and the East side of the Tank Seam Pad (down-drainage side), maintaining access to the bottom of the canyon for topsoiling. As fill material is placed on the access roads, it will result in narrowing the road width, while backfilling the cut slope. Materials will be compacted in lifts not to exceed 24 inches in depth. Large diameter rocks will be incorporated into the outslope which is created by filling to aid in surface stability. This procedure will be followed until the majority of the cut is backfilled and the roads have been narrowed to "pilot cuts" which will still allow the equipment access to the areas. During the backfilling and grading process, culverts will be excavated and removed.

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Topsoil will then be placed on the excavated areas of the pad and on the reclaimed slopes utilizing a trackhoe.

Any reclaimed slopes which will be out of reach of the trackhoe when backfilling is complete will receive topsoil during the backfilling process while the area is still within reach. As topsoil is placed, the surface will be roughened with deep gouges as described in Appendix 7-K.

The reclaimed channel, RC-9, will then be constructed in the drainage while the area is still accessible. The remaining fill material will then be excavated and temporarily placed along the portion of the access road which will remain in place for post-mining use and the post-mining roads will be reestablished. The excavated areas will be topsoiled in conjunction with the excavation. The "pilot cuts" will then be reclaimed in the same manner as the Tank Seam Access Road described above using the material previously placed along the remaining portions of the access road. When the backfilling is complete, silt fences will be staggered along the edge of the drainage as shown on Plate 5-6G for runoff control.

The conveyor access roads will be reclaimed in a similar manner. As all areas are reclaimed, the surface will be gouged using a trackhoe, creating pockets approximately 8-12 inches deep to aid in water retention for revegetation.

Since a cut slope existed along portions of this area prior to mining, there may not be enough material to completely eliminate the entire cut. In areas where cuts existed prior to mining, the material will be placed so as to backfill the cut to the extent possible. These areas are shown on Plates 5-6.

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Slopes will be constructed in accordance with the slope stability recommendations presented in Appendix 5-J and Appendix 5-K. This will insure a slope stability factor greater than 1.3. Due to the limitation of a maximum slope of 2H:1V, some portions of the road and pad cuts will be left during reclamation. The locations of the cuts are shown on Plates 5-6F and 5-6G. The heights of these cuts are summarized on page 5J-64. These cuts are also shown on the cross-sections in the post-mining slope stability analysis in Appendix 5-J and Appendix 5-K.

Following regrading, seed and fertilizer will be placed on the completed slopes by hand. Following seeding, erosion control matting similar to Excelsior-S-2 or equivalent will be placed on slopes constructed at or near 2h:1v. The erosion control matting will be installed in strict conformance with the manufacturer's instructions. Following the placement of the matting, the temporary silt fences placed for runoff control during reclamation will be removed.

542.300 Final Surface Configuration Maps and Cross Sections

Plates 5-6 show the final surface configurations after reclamation. Cross sections on shown on the maps are found in Appendixes 5-I, 5-J, and 5-K.

542.400 Removal of Temporary Structures

See R645-301-240, R645-301-340, R645-301-412, R645-301-540, and R645-301-740.

542.500 Timetable for Removal of Water Impoundments

See R645-301-542.100

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542.600 Roads

See R645-301-240.

542.700 Final Abandonment of Mine Openings and Disposal Areas

See R645-301-529 and R645-301-738.

542.800 Reclamation Costs

See R645-301-830.100 and R645-301-830.300

R645-301-550 Reclamation Design Criteria and Plans

R645-301-551 Casing and Sealing of Underground Openings

The Bear Canyon Mine complex has eight existing portals.

The Bear Canyon #3 and #4 mines have a total of six portals (Plate 5-1A and 5-1C), all located in Bear Canyon. The #4 Mine has an auxiliary portal described in Appendix 5P. All portals will be reclaimed as described in section R645-301-529, and R645-301-738.

R645-301-552 Permanent Features

No response required.

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R645-301-553 Backfilling and Grading

553.100 Disturbed Area

See R645-301-240, R645-301-412.100, and R945-301-540.

553.200 Spoil and Waste

See R645-301-513, R645-301-514, and R645-301-525.

553.250 Refuse Pile

Not applicable.

553.260 Disposal of Coal Processing Waste

See R645-301-513.

553.300 Exposed Coal Seams

See R645-301-731.100 and R645-301-731.300

553.400 Cut and Fill Terraces

No cut and fill terraces are proposed.

553.500 Previously Mine Areas

See R645-301-540

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553.600 Approximate Original Contour

See R534-301-540

553.700 Backfilling and Grading Thin Overburden

Not applicable.

553.800 Backfilling and Grading Thick Overburden

Not applicable

R645-301-560 Performance Standard

Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-511 through R645-301-553.

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Table 7-14 Water Monitoring Matrix: Operational Phase of Mining

Location		Status	Jan	Feb	Mar	May	June	July	Aug[2]	Sept	Oct	Nov	Dec
Streams													
BC-1	(Upper Bear Creek)	Active		oper		oper.			oper.		oper.		
BC-2	(Lower Bear Creek)	Active		oper		oper.			oper.		oper.		
BC-3	(Lower Rt Fork Bear Creek)	Active		oper		oper.			oper.		oper.		
BC-4	(Upper Rt Fork Bear Creek)	Active		oper		oper.			oper.		oper.		
CK-1	(Upper Cedar Creek)	Active		oper		oper.			oper.		oper.		
CK-2	(Lower Cedar Creek)	Active		oper		oper.			oper.		oper.		
MH-1	(Lower McCadden Hollow Creek)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
MH-2	(Upper McCadden Hollow Creek)	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
FC-1	(Lower Left Fork Fish Creek)[7]	Active				field[5]			field		field		
FC-2	(Lower Right Fork Fish Creek)[7]	Active T16NR & E Sec 17 or 20				field[5]			field		field		
FC-3	(Right Fork Fish Creek Property Line)[7]	Active T16NR & E Sec 17 or 18				field[5]			field		field		
FC-4	(Upper Right Fork Fish Creek)[7]	Active T16NR & E Sec 7 or 18				field[5]			field		field		
FC-5	(Mud Spring)[7]	Inactive; initiate when mining T16N R & E Sec 7				field[5]			field		field		
FC-6	(Upper Left Fork Fish Creek)[7]	Active T16N R & E Sec 18,19 or 20				field[5]			field		field		
FC-7	(Water Right Upper Left Fork Fish Creek)	Active T16N R & E Sec 18,19 or 20				field[5]			field		field		
FC-8	(Water Right Upper Left Fork Fish Creek)	Active T16N R & E Sec 18,19 or 20				field[5]			field		field		
Springs													
SBC-4	(Big Bear Springs)[4]	Active		oper		oper.			oper.		oper.		
SBC-5	(Birch Spring)[4]	Active		oper		oper.			oper.		oper.		
SBC-9a	(Hiawatha Seam)	Active		oper		oper.			oper.		oper.		
SBC-12	(16-7-13-1)[8]	Inactive; initiate when mining begins i Mohrland				field[5]			field		field		
SBC-14	(WHR-6)	Active				oper.			oper.		oper.		
SBC-15	(WHR-5)[8]	Active				field[5]			field		field		
SBC-16	(WHR-4)[6,7,8]	Active				field[5]			field		field		
SBC16A	[7,8]	Active				field[5]			field		field		
SBC-16B	[7,8]	Active				field[5]			field		field		
SBC-17	(16-7-24-4)	Active		oper		oper.			oper.		oper.		
SBC-18	(WHR-2)[7,8,9]	Active				field[5]			field		field		
SBC-20	(16-8-18-4)[8,9]	Active				field[5]			field		field		
SBC-21	(16-8-18-1)[7,8,9]	Active				field[5]			field		field		
SBC-22	(Stockwater Trough)[8,9]	Active				field[5]			field		field		
SCC-1	(16-8-20-1)[8,9]	Inactive; initiate when active mining i Mine #4 or Mohrland area is within 500				field[5]			field		field		
SCC-2	(16-8-18-5)[7,8,9]	Active				field[5]			field		field		
SCC-3	(Mohrland Portal)[8]	Active				field[5]			field		field		
SCC-5	(16-8-7-3)[8,9]	Inactive; initiate when active mining i Mohrland area is within 500 feet				field[5]			field		field		
SMH-1	(FBC-6)[8]	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
SMH-2	(FBC-5)[8]	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
SMH-3	(FBC-13)[8]	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
SMH-4	(FBC-4)[8]	Inactive - Initiate if mining in Lease U 46481 or U-024316				field[5]			field		field		
SMH-5	(Stockwater Trough)[8]	Active				field[5]			field		field		
Wells													
SBC-3	(Creek Well)	Active		oper		oper.			oper.		oper.		
SDH-2	(Well Sec. 11, T16S, R7E)	Inactive - Initiate if mining in Lease U 46481 or U-024316				level[5]			level		level		
SDH-3	(Well Sec. 10, T16S, R7E)	Inactive - Initiate if mining in Lease U 46481 or U-024316				level[5]			level		level		
MW-114	(Well Sec. 18, T16S, R8E)	Active				level[5]			level		level		
MW-117	(Well Sec. 12, T16S, R8E)	Active				level[5]			level		level		

Notes:
1. See Tables 7-13 and 7-17 for listing of water quality monitoring parameters.
2. oper. = operational base = baseline
3. Expanded List parameters taken in August of year 5 prior to each permit renewal.
4. SBC-4 and SBC-5 shall also be tested for oil and grease
5. First sample to be taken in May or June, when Gentry Mountain is accessible.
6. A comment will be made regarding the level of the pond feeding the spring.
7. Weekly monitoring to begin one month prior to mining in area and continue until one month after. Monthly monitoring will then be done for an additional six months at which time it will resume its normal schedule.
8. Weekly flow monitoring to begin one month prior to mining in area and continue until one month after. Monthly monitoring will then be done for an additional six months at which time it will resume its normal schedule.
9. Initiate when active mining in # 4 Mine or Morhland area is within 500 ft.

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Additional Monitor Wells. A minimum of one additional drillhole will be installed in the northern portion of the Wild Horse Ridge area, shown as DH-5 on Plate 5-1C. If necessary, additional wells may be installed following the installation and evaluation of DH-5 in order to adequately characterize the groundwater aquifers of the lower Blackhawk and upper Star point formations. DH-5 and any additional drillholes will be tested using the same methodology, which was used in the previous in-mine wells, described in Appendix 7-N. The holes will then be completed as monitor wells in the same manner as described in Appendix 7-N.

Springs above the mine have also been selected based on the conclusion of Appendix 7J and 2006 field investigations that included regulating agencies and interested parties. Because these springs are above the coal seam water quality impacts are not a major concern, however flow quantity impacts are. Sites were selected because they were either major contributors to surface water systems, or they were springs that have been developed for beneficial use or have water rights on them. The major contributors to surface water systems are SMH-3, SMH-4, SBC-12, SBC-18, SBC-20, SBC-21, SCC-1, SCC-3, and SCC-5. Perennial portions of the streams feed by sites SCC-5, SCC-2, SBC-16, SBC-16A, SBC-16B, SBC-20, and SBC-21 will be undermined. Because of this these sites will be monitored for flow weekly starting one month prior to undermining and continuing until one month after undermining at which time they will be monitored monthly for six months before returning back to their normal monitoring schedule. The actual start time will be determined based on continual underground surveying that is required by MSHA. Castle Valley Mining will submit via email to OGMCOAL@utah.gov the MRP required weekly reportscollected during the previous month no later than the second Friday of the following month for the selected accelerated sites outlined in 7-60A & this page. The ground water sites selected because they were developed or had water rights are SMH-1, SMH-2, SMH-5, SBC-15, SBC-16, SBC-16A, SBC-16B, and SBC-22.

Measuring the flow from springs and seeps is almost always difficult because flows tend to be dispersed and rarely concentrate into well-defined channels amenable to discharge measurement.
The most accurate method of measuring small discharges, and the method that will be used, is by observing the time required to fill a container of known capacity, or the time required to partly fill a calibrated container. The basic equipment is a stopwatch and a calibrated container.

Purchased pre-calibrated containers may be used or containers will be calibrated by either adding known volumes of water by increments and measuring the depth of water in the container, or by weighing the container with varying amounts of water in it, noting the depth in the container, and using the formula: $V = (W2-W1)/w$; where: V = volume of water in the container, $W2$ = weight of container with water, $W1$ = weight of empty container, and w = unit weight of water.

The basic field procedure will consists of interrupting the flow and collecting the water. Temporary earth dams may be constructed to divert the water through a small diameter pipe for capture. Or it may be possible to place a trough or half of a stove pipe against the spring or seep to carry the water to the calibrated container. Cloths, clay, or other materials will be used to temporarily seal cracks and force the water to go into the calibrated container. Where flows come out of the ground in a number of distinct sources or if they are scattered over a broad area, the results of several different measurements will be added together.

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Flows will be determined by direct measurement (depth times width times 2/3 velocity), by use of portable or stationary weirs or flumes, or, whenever feasible, by timed filling of a unit volume container. Measurements will be taken by qualified personnel following standard procedures with calibrated instruments.

Stream monitoring sites were selected based on the conclusion of Appendix 7J and 2006 field investigations that included regulating agencies and interested parties.

Annual Report. An Annual Report evaluating all data collected for the year will be submitted to DOGM as required.

Quarterly Data Submission. All water monitoring data will be submitted to DOGM on a quarterly basis within 30 days following the end of the quarter.

Weekly Data Submission. Castle Valley Mining will submit via email to OGMCOAL@utah.gov the MRP required weekly reports collected during the previous month no later than the second Friday of the following month for the select accelerated sites outlined in 7-56 & 7-60A.

Discharge Permit and Reporting. All discharge report forms filed to meet Government requirements will be submitted to DOGM in the quarterly Water Monitoring Report. A copy of the mine discharge permit is included in Appendix 7-B.

Post-Mining Portal Discharge. No gravity discharges are expected from the Bear Canyon No. 3 or No. 4 mines during or following reclamation. Any post-mining portal discharge that occurs will be monitored quarterly for operational parameters shown on Table 7-16. No water will be discharged into the mine during or following reclamation.

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Undermining of Perennial Streams. There are two areas where perennial streams will be undermined. They are the upper reaches of the right fork and left fork of Fish Creek.

The left fork is fed by one watershed and several springs. FC-7 and FC-6 are surface monitoring sites in this watershed, however flow has only been observed at these points during major storm events and spring run-off. Most of the year the streams are dry above the confluence of the major springs feeding it. These springs are SBC-18, SBC-20, and SBC-21, with SBC-21 being the largest. The confluence of these springs with the mainstream channel is inaccessible.

The right fork of Fish creek has two splits and is fed by three watersheds. The left split of the stream channel has base flow fed by SCC-5. This point also marks the start of the perennial section. The center split base flow is fed by SCC-2 which also marks the start of the perennial section for the center split. The right split is dry except during spring run-off or large storm events. However, during wet years water may flow from site FC-5 (Mudd Spring). Because of this FC-5 was selected as a start of the perennial section of the right split. Site FC-3 marks the property line between private and federal property, and FC-2 was selected to monitor off site impacts.

In these areas Castle Valley Mining will increase the monitoring of these sites to a weekly basis one month prior to mining in the area. This weekly monitoring will continue until one month after mining has left the area. Monitoring will then be reduced to once a month for an additional 6 months at which time it will resume its normal schedule. This increased monitoring will include the sites FC-2, FC-3, FC-4, FC-5, and SCC-2 for the right fork of Fish Creek, and FC-1, FC-6, SBC-16, SBC-16A, SBC-16B, SBC-18, and SBC-21 for the left fork of Fish Creek. The actual start time will be determined based on continual underground surveying that is required by MSHA. Castle Valley Mining will submit via email to OGMCoal@utah.gov the MRP required weekly reports collected during the previous month no later than the second Friday of the following month for the select accelerated sites outlined in 7-56 & this page.

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742.220 Sediment Ponds

Four sedimentation ponds, A, B, C, and D have been constructed to hold run-off from the disturbed area of the Mine Plan to facilitate settling and filtering of contaminated surface water from the mine site.

Surveys of A, B, and C sedimentation ponds were conducted in November 1990, and October, 1995, by Olympus Aerial Surveys, Inc. Additional pond surveys were conducted by EarthFax Engineering, Inc. in May, 1991. As-built surveys were completed for ponds A and B in July, 1991, and the topography and cross sections are contained on and 7-3, respectively. As-built surveys for Pond C was completed in August, 1993, and the topography and cross-sections are shown on Plate 7-6.

A fourth sediment pond was built in conjunction with the Bear Canyon No. 3 mine Portal Area. All of the runoff from the portal pad will report to sediment pond D.

Discharge. Discharge from the sediment ponds is to Bear Creek or the Right Fork ephemeral drainage. Each pond is constructed with both an open channel spillway and a decant device, 4 in. valved drainpipe with down turned inlet located above the 60 pct sediment cleanout elevation. The decant device allows for separation of oil, grease and other floatables. Discharge to surface waters is governed by the State of Utah Division of Water Quality. See Appendix 7-B, Discharge Permit.

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Officers and Directors

OFFICER	TITLE	BEGIN DATE OWNERSHIP	BEGIN DATE AFFILIATION	END DATE
David Zatezalo	Chief Executive Officer	N/A	9/4/2009	
Christopher I. Walton	President	N/A	4/11/2012	
R. Chad Hunt	Vice President	N/A	3/2/2012	
Richard Boone	Senior Vice President, CFO & Treasurer	N/A	10/5/2010	
Whitney Kegley	Vice President, Secretary & General Counsel	N/A	7/16/2012	
Elizabeth Branham	Vice President, Controller, Assistant Secretary	N/A	1/1/2007	
Brian Aug	Vice President of Sales	N/A	8/5/2013	
Corey Heaps	Vice President	N/A	9/8/2010	
Jefff Quatman	Vice President	N/A	3/31/2011	
Mark Zand	Chairman	N/A	6/10/2010	10/5/2010
Chad Hunt	President	N/A	6/10/2010	3/2/2012
Christopher N. Moravec	Senior Vice President, Business Development	N/A	6/10/2010	3/2/2012
Joseph Miller	Vice President	N/A	6/10/2010	7/16/2012
Joseph Miller	Asst. Secretary	N/A		10/5/2010
Andrew Cox	Vice President Sales	N/A	6/10/2010	8/2/2013
Arthur Amron	Vice President and Assistant Secretary	N/A	6/10/2010	10/5/2010
Jay Maymudes	Vice President, Secretary and Treasurer	N/A	6/10/2010	10/5/2010
Paul Jacobi	Vice President	N/A	6/10/2010	10/5/2010
Gary Isaac	Vice President and Assistant Secretary	N/A	6/10/2010	12/31/2012
		N/A		
Rhino Energy LLC	Member, Shareholder - 100%	N/A	6/10/2010	

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Officers and Directors

OFFICER	TITLE	BEGIN DATE OWNERSHIP	BEGIN DATE AFFILIATION	END DATE
Christopher I. Walton	CEO	N/A	10/21/2013	
Christopher I. Walton	President	N/A	8/19/2013	
Christopher I. Walton	Senior VP & Chief Operating Officer	N/A	4/11/2012	8/19/2013
Richard Boone	Senior Vice President, CFO & Treasurer	N/A	10/5/2010	
Whitney Kegley	Vice President, Secretary & General Counsel	N/A	7/16/2012	
Elizabeth Branham	Vice President, Controller and Assistant Secretary	N/A	1/1/2007	
Brian Aug	Vice President of Sales	N/A	8/5/2013	
R. Chad Hunt	Vice President of Technical Services	N/A	8/28/2008	
Jeff Quatman	Vice President	N/A	1/1/2011	
Andrew Cox	Vice President of Sales	N/A	1/22/2007	8/2/2013
Joseph Miller	Vice President and Assistant Secretary	N/A	1/3/2007	7/6/2012
Arthur Amron	Vice President and Assistant Secretary	N/A	6/26/2003	10/5/2010
Jay Maymudes	Vice President, Secretary and Treasurer	N/A	6/26/2003	10/5/2010
Paul Jacobi	Vice President	N/A	6/26/2003	10/5/2010
Corey Heaps	Vice President of Western Operations	N/A	9/1/2010	12/21/2011
Wexford Capital LLC	Member, Manager 0%	N/A	4/30/2003	10/5/2010
Taurus Investors LLC	Member, Shareholder <10%	N/A	4/30/2003	10/5/2010
Valentis Investors LLC (Class A)	Member, Shareholder >10%	N/A	4/30/2003	10/5/2010
Artis Investors LLC (Class A)	Member, Shareholder <10%	N/A	4/30/2003	10/5/2010
Artis Investors LLC (Class B)	Member, Shareholder <10%	N/A	4/30/2003	10/5/2010
Callidus Investors, LLC	Member, Shareholder <10%	N/A	10/1/2003	10/5/2010
Solitar Corporation	Member, Shareholder >10%	N/A	7/15/2003	10/5/2010
Wexford Spectrum Investors LLC	Shareholder >10%	N/A	11/1/2004	10/5/2010
David Zatezalo	President & CEO	N/A	9/4/2009	10/21/2013
Mark Zand	Chairman	N/A	6/26/2003	10/5/2010
Christopher N. Moravec	Senior Vice President, Business Development	N/A	3/23/2007	3/2/2012
Nick Glancy	CEO & President	N/A	10/4/2005	3/5/2009
David Zatezalo	Senior Vice President & COO	N/A	3/1/2007	9/4/2009
Thomas Hanley	Senior Vice President	N/A	9/1/2007	9/4/2009

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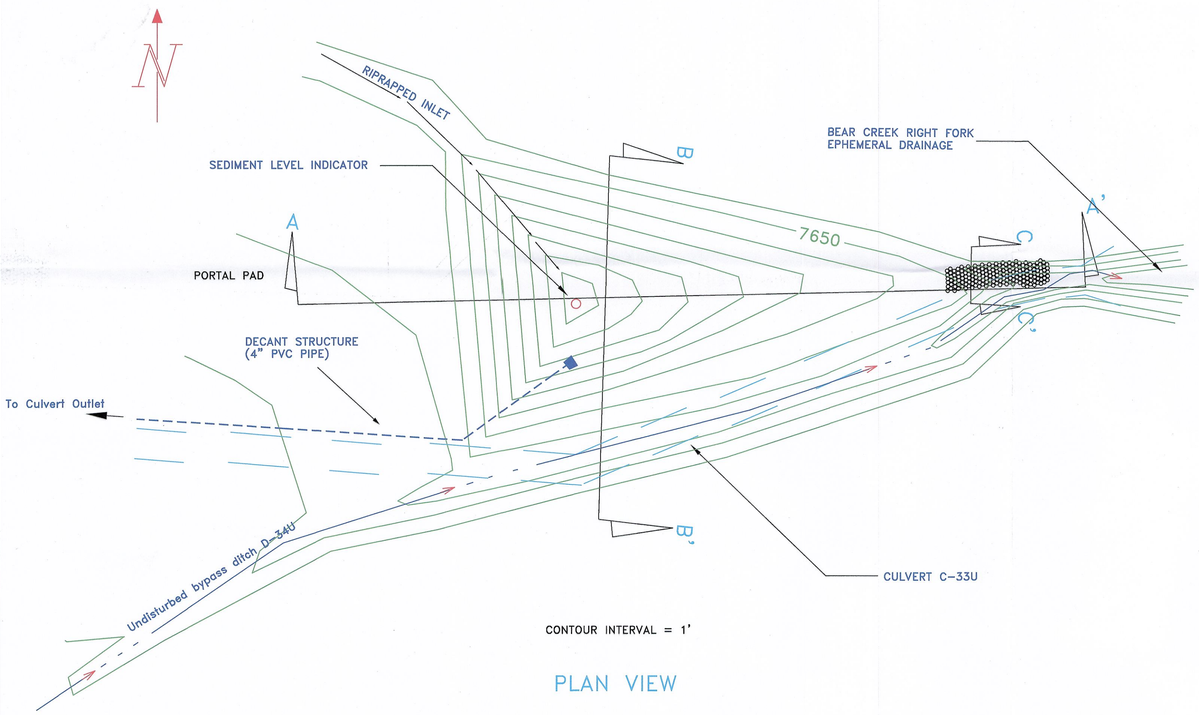
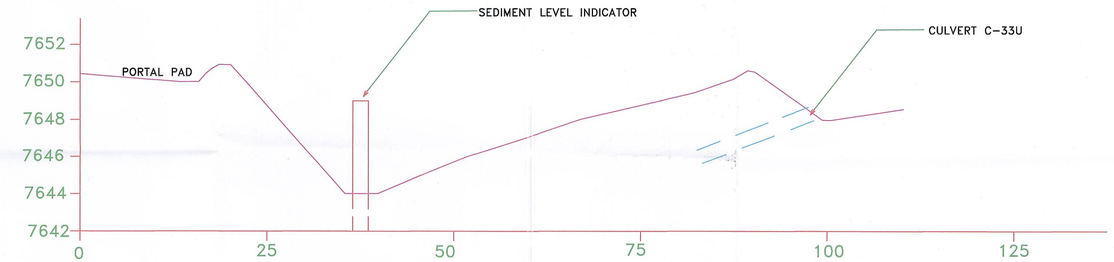
Gas & Mining

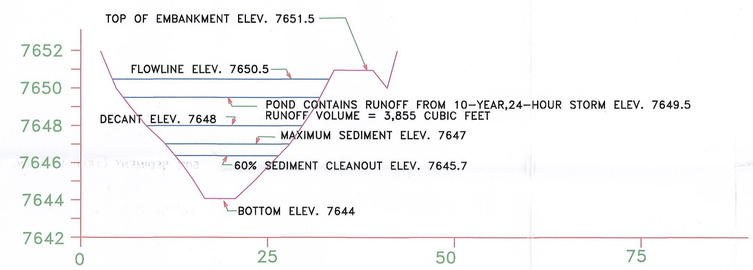


CONTOUR INTERVAL = 1'

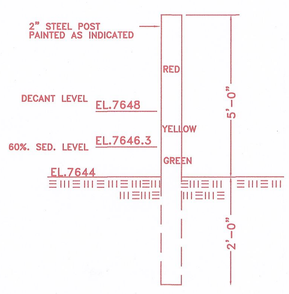
PLAN VIEW



SECTION A-A'

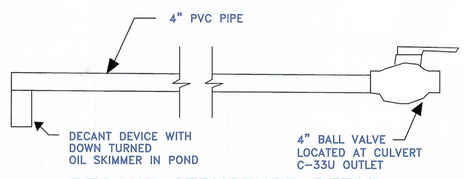


SECTION B-B'



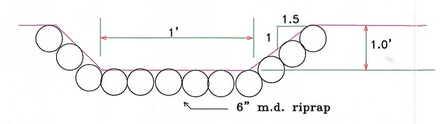
SEDIMENT LEVEL INDICATOR

N.T.S.



DECANT STRUCTURE DETAIL

N.T.S.



SPILLWAY SECTION C-C'

N.T.S.

REV.	DATE	REMARKS	APPR.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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MAR 21 2014
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MAR 20 2014
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PROFESSIONAL ENGINEER
No. 22-168287-2203
J. THOMAS PALUSO
STATE OF UTAH

CASTLE VALLEY MINING LLC.
HUNTINGTON, UTAH

SEDIMENT POND "D"

SCALE:	DRAWN BY:	DATE:
1"= 20'	C. REYNOLDS	6-25-01

BEAR CANYON | PLATE 7-11